



Partner Reported Opportunities (PROs)
For Reducing Methane Emissions

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☒
Wells ☐
Other ☐

Test Gate Station Pressure Relief Valves with Nitrogen

Applicable sector(s):

☒ Production ☒ Processing ☒ Transmission and Distribution

Partners reporting this PRO: PECO Energy

Other related PROs: Test and Repair Pressure Safety Valves, Redesign Blowdown Systems and Alter ESD Practices

Technology/Practice Overview

Description

Pressure relief valves (PRVs) play a vital safety role by protecting gas pipelines from catastrophic rupture. They are routinely tested for the proper pressure setting by isolating them from the pipeline and activating (popping) them with natural gas pressure.

Testing and adjusting the set-point pressure requires multiple tests or a continuing release of high pressure gas. When multiplied over many PRVs, this practice can release significant amounts of methane. One partner reports eliminating the emissions by testing relief valves with pressurized nitrogen gas supplied from cylinders.

Principal Benefits

Reducing methane emissions was:

☐ A primary justification for the project ☒ An associated benefit of the project

Operating Requirements

Requires a cylinder of gas at a pressure exceeding the PRV set-point.

Applicability

This practice applies to all PRVs where gas release is a safety or environmental hazard, such as in sour gas service.

Methane Savings

8 Mcf/yr

Costs

Capital Costs (including installation)

None

Operating and Maintenance Costs (Annual)

☐ < \$100 ☒ \$100-\$1,000 ☐ > \$1,000

Payback (Years)

☐ 0-1 ☐ 1-3 ☐ 3-10 ☒ > 10

Methane Emission Reductions

The amount of methane vented in a valve test is a function of the valve size and the line pressure. A partner reported avoiding methane emissions of up to 10 Mcf/yr by testing 120 pressure relief valves with nitrogen instead of methane.

Economic Analysis

Basis for Costs and Savings

The methane savings of 8 Mcf/yr apply to 100 pressure relief valves a year based on partner reported surveys.

Discussion

Safety is the primary justification for testing pressure relief valves with nitrogen rather than natural gas. The economics of this PRO are based on data reported by one partner and reflect only the additional cost of nitrogen. The partner reported using 25 cylinders at 400 scf nitrogen per cylinder. Costs exclude labor as the company would have incurred the same labor costs to test valves with natural gas. There is no capital equipment required.